UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

DATE: June 4, 2002

SUBJECT: Facility Air Inspection - A. Finkl & Sons, Chicago, IL

FROM: Nathan A. Frank, Environmental Engineer
Air Enforcement and Compliance Assurance Section (MN/OH)

THRU: William MacDowell, Chief
Air Enforcement and Compliance Assurance Section (MN/OH)

TO: Files

Date of Inspection:
May 1, 2002

Participants:
U.S. EPA
Nathan Frank, Environmental Engineer
Will Brooke, Environmental Engineer

A. Finkl & Sons
Carl Manthe, Environmental Manager

Facility Information:
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Contact: Carl Manthe
Primary SIC Code: 3462 (Iron and Steel Forgings)

Background:
The United States Environmental Protection Agency Region 5 (U.S. EPA) conducted an inspection at A. Finkl & Sons (A. Finkl) on May 1, 2002. This Facility manufactures steel forgings.

The purpose of this inspection was to assist determining compliance with rules and regulations promulgated under the Clean Air Act and the Illinois State Implementation Plan (SIP). The Illinois Environmental Protection Agency (IEPA) was notified prior to the inspection.

The following regulations promulgated under the Clean Air Act may apply to A. Finkl:

40 C.F.R. §52.21 - Federal Prevention of Significant Deterioration of Air Quality Rules

40 C.F.R. Part 60 Subpart AA - Standards of Performance for Steel Plants: Electric Arc Furnaces Constructed After October 21, 1974 and On or Before August 17, 1983

40 C.F.R. Part 60 Subpart AAa - Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983

The following Regulations promulgated by the State of Illinois and approved by the U.S. EPA under Illinois' SIP may apply to A. Finkl:

35 IAC Part 270 - Requirements to obtain a Title V operating permit for major sources of air pollution

35 IAC 201.142 - Requirements to obtain a construction permit prior to constructing a new emission source or modifying an existing emission source

35 IAC 212.123(a) - Limits visible emissions from stationary sources to 30% opacity

35 IAC 216.121 - Limits carbon monoxide emissions from fuel burning equipment to 200 ppm

35 IAC 212.321 and 322 - Provides particulate matter limits for process emission units.

The facility has the following air pollution permits issued by the IEPA:

95120184 - Title V Permit issued October 24, 2000. This permit identifies each applicable regulation and includes recordkeeping, reporting, testing, and monitoring conditions for the facility.

Entry Procedures:
U.S. EPA arrived at the facility at 9:20 am CDT. U.S. EPA observed visible emissions from the melt shop at approximately 65% opacity in the walk up to the plant.

To gain entry to the facility, U.S. EPA called Carl Manthe, Environmental Manager, via cell phone. He was informed that an air pollution inspection would be conducted immediately. After the call, Mr. Manthe met U.S. EPA at the front door and Mr. Frank and Mr. Brook presented their enforcement credentials. Mr. Manthe then led them into an office where the opening conference commenced.

Opening Conference:
To begin the conference, U.S. EPA informed Mr. Manthe the reasons for the inspection.

Forging Manufacturing
U.S. EPA asked A. Finkl to provide a brief facility description. Steel scrap is brought in by truck or rail and stored in outdoor piles. The scrap is loaded into charge buckets and charged into one of two electric arc furnaces (EAFs) where it is melted. Melting is typically performed at night to take advantage of discounted electricity prices. Each EAF has a capacity of 90 tons per batch. Mr. Manthe indicated that both EAFs were constructed in the

1950's. The EAFs are controlled by two baghouses with a combined air flow capacity of 92,000 cfm. The emissions are collected by a direct shell evacuation control system and a side draft hood. It takes approximately 4 hours to melt a batch of steel. The melted steel is tapped (poured) into a ladle. The tap lasts approximately 20 minutes. Mr. Manthe indicated that the EAFs may have been tapping around 9:10 am, when U.S. EPA observed visual emissions. The ladle is moved to a vacuum arc de-gasser, where oxygen is removed from the metal. The ladle of metal is then moved to the teeming area, where the metal is poured into ingot molds. The metal is then allowed to solidify in the molds. It takes 8-12 hours for a mold to solidify. The vacuum arc de-gasser and the teaming operations are uncontrolled.

The metal ingots are re-heated in natural gas fired furnaces and stamped into intermediate shapes in a forge. 5 forges are operated at A. Finkl. A. Finkl also operates a machine shop.

To improve the quality of the metal, the forgings are heat treated in numerous natural gas fired furnaces and quenched in a water bath.

Mr. Manthe indicated that the oil quench tank, the shot blasting operation, and the scarfing station that are listed in the Title V permit have not been operated in a number of years.

Production Data
U.S. EPA asked A. Finkl about annual production rates. Mr. Manthe stated that A. Finkl had a throughput of 65,000 tons. Mr. Manthe then provided printouts of their weekly production rates over the last two years. Mr. Manthe indicated that they reached their peak production levels in 1997.

Emissions/Tests
U.S. EPA asked A. Finkl about emissions tests. Mr. Manthe indicated that an emissions test had never been performed at the facility. U.S. EPA asked about visual emissions (VE) tests. Mr. Manthe stated that he was not aware of such a test being conducted at the facility. U.S. EPA indicated they would return to conduct a VE test on a later date.

The opening conference then concluded.

Plant Tour:
The facility consists of the melt shop, a scrap yard, and several other buildings where forging and heat treating occur. Most of the tour was spent in the melt shop, forging shop, scrap yard, and at the quench station. U.S. EPA made the following observations during the tour:

1. One of the EAFs had been tapped shortly before the tour. Metal was in the vacuum arc de-gasser when the tour began.
2. The EAFs were not running at the time of the tour.
3. A haze was observed throughout the shop.
4. U.S. EPA asked about the type of steel processed in the EAFs. Mr. Manthe stated they manufacture low alloy steel.
5. The baghouse fan was in operation at the time of the tour.
6. U.S. EPA requested to see the transformers that provide power to the EAFs. Mr. Manthe indicated that the transformer for each EAF was

replaced recently. One transformer is rated at 18 MVA and the other is rated at 12 MVA.

7. U.S. EPA asked if the scrap is tested for radioactivity. Mr. Manthe indicated that the scrap is tested with a gigercounter.
8. U.S. EPA observed teaming. Before the metal was teamed, plant personnel introduced bags of insulation into the ladle. U.S. EPA observed VE and large pieces of ash floating toward the roof. When the metal was poured into the molds sparks and VE were observed. The shop filled with smoke.
9. U.S. EPA observed forging. U.S. EPA watched a large shaft being formed. No VE was observed during this process. Mr. Manthe indicated that all 5 presses can be operated simultaneously.
10. U.S. EPA noted that a forge can custom form any shape that is necessary. Cylinders, circles, blocks, and several other shapes were observed.
11. U.S. EPA observed the heat treating operation. Metal forgings are heated to 1800°F.
12. U.S. EPA observed the water quenching operation. Other than steam, no VE was observed.

Records Review:

USEPA requested to review all records required by the Title V permit. A. Finkl supplied records of hourly production rates. Mr. Manthe gave copies of these records to U.S. EPA. A. Finkl also supplied copies of their 2000 and 2001 annual emission reports submitted to IEPA. These reports included annual natural gas usage rates, annual metal throughput, and emissions calculations.

Closing Conference:

U.S. EPA asked about the frequency of transformer replacement projects. Mr. Manthe indicated that they are not routinely replaced. U.S. EPA asked why the transformers were replaced. Mr. Manthe indicated the old transformers broke down. Mr. Manthe gave U.S. EPA a copy of a letter sent by A. Finkl & Sons to IEPA on February 6, 1998 discussing the transformer replacement. This letter is attached.

USEPA asked A. Finkl about the amount of batches melted per day. Mr. Manthe stated that each EAF does 2 batches each night for a total of 4 batches per night.

U.S. EPA indicated they would call A. Finkl later in the week to set up a time to conduct a VE test and observe a tap.

To conclude the inspection, U.S. EPA informed A. Finkl that the inspection report may be available via FOIA and that they could claim information as CBI.

Follow Up Visit:

On May 7, 2002, Nathan Frank, Rae Lynne Trine, and Will Brooke returned to A. Finkl to conduct a U.S. EPA Method 9 Visual Emissions Test during EAF charge and tap. Mr. Brooke went into the EAF shop to observe the charging and tapping operations while Mr. Frank and Ms. Trine conducted the VE test.

Mr. Frank and Ms. Trine determined it was too windy and cloudy to conduct the test accurately, so the test was aborted.

After the charging and tapping operations were complete, U.S. EPA asked A. Finkl about the dates for the transformer replacement projects. Mr. Manthe indicated that a 7.5 MVA transformer was replaced with a 12 MVA transformer in July, 1989 and a 7.5 MVA transformer was replaced with a 18 MVA transformer in July, 1997.

Mr. Manthe claimed the hourly production rates supplied to U.S. EPA on May 1, 2002 as CBI. U.S. EPA agreed to treat this information as such. On May 13, 2002, U.S. EPA received a letter from A. Finkl memorializing this agreement.

A VE Test will be performed at A. Finkl on a later date.

Attachments:
IEPA Title V Permit 95120184
Correspondence between A. Finkl & Sons and IEPA February 6, 1998

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